

Title: A POLYPEPTIDE COMPRISING THE AMINO ACID OF AN N-TERMINAL CHOLINE BINDING PROTEIN A TRUNCATE, VACCINE DERIVED THEREFROM AND USES THEREOF

Inventor(s): Tuomanen

Application No: To Be Assigned

Atty Dkt No: 044158/273011

1/8

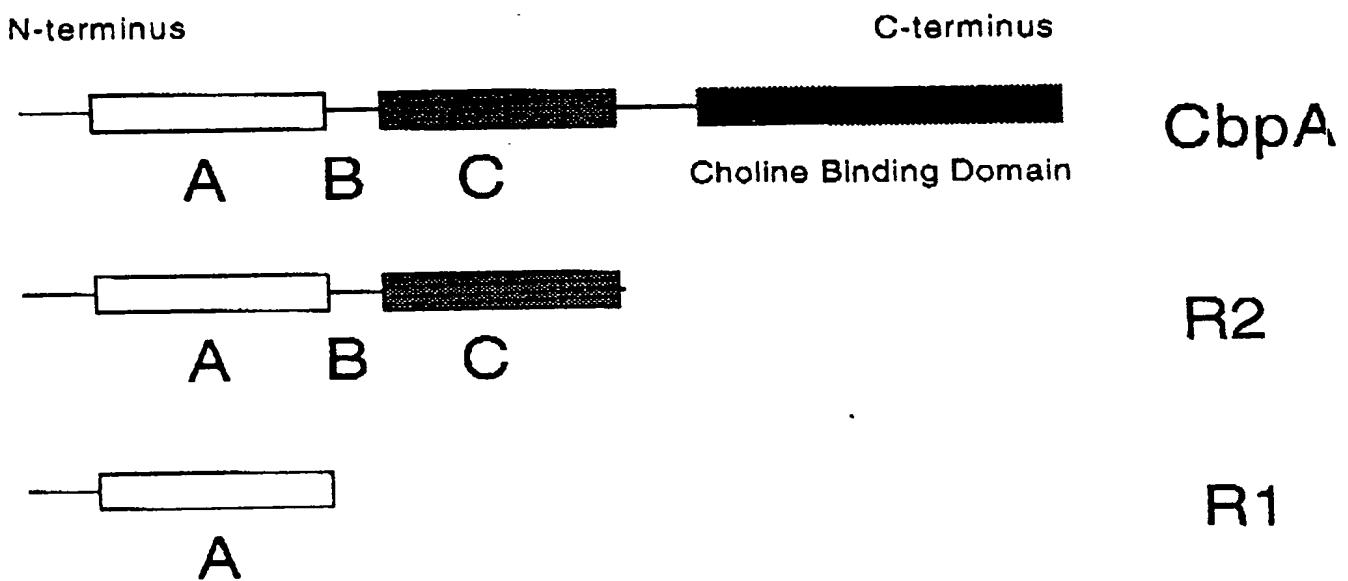


Figure 1

BEST AVAILABLE COPY

	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210
	-AVASLVMGSVVHATEKEVTTQVATSSNRANESQTEHRKAAKQ-					VDEYIKKML	-Q--L														
SPB328 (23F)	Cbp -AVASLVMGSVVHATEKEVTTQVATSSNRANESQTEHRKAAKQ-					VDEYIKKKL	--Q--L	53													
SPB365 (23F)	Cbp -AVASLVMGSVVHATEKEVTTQVATSSNRANESQTEHRKAAKQ-					VDEYIKKKL	--Q--L	53													
SPB105 (6B)	CbpA VAVASLVMGSVVHATEKEVTTQVATSSNRANESQAGHRKAAEQF-					DEYIKTMI	--Q--L	54													
SPSJ12 (19A)	Cbp -AVASLVMGSVVHATENEGTTQAPTSSNRGNESQAERHMKAAKQ-					VDEYIEKML	--Q--L	53													
SPB331 (14)	CbpA --VASLVMGSVVHATEKEVTTQVATSSNKANKSQTEHRMKAAKQ-					VDEYIKKKL	--Q--L	52													
SPR332 (9V)	CbpA CTVASLVMGSVVHATENERTTQVPTSSNRGK--PERRKAAEQF-					DEYINKMI	--Q--L	51													
ATCC2	CbpA trun VAVASLVMGSVVHATEKEVTTQVPTSSNRGK--TEHRAAKQV-					VDEYIEKMLREIQ	--L	55													
R6X(2)	CbpA tru -----ENEGSTQAAATSSNRGK--TEHRAAKQV-					VDEYIEKMLREIQ	--L	40													
SPSJ9 (14)	CbpA Y-TASLFLGGVVHAE---GVRSENNPTVTSGQDISKKYADE-					VKSHLEKILSEIQTNL	54														
ATCC6B	CbpA tru ---ASLFLGGVVHAE---GVRSGNNSTVTSGQDISKKYADE-----					VEHLSILKDVKNL	52														
Ntpe4	CbpA tru CIVASLVMGSVVHATENEGATQVPTSSNRANESQAEOQEOPKKLDSERDKARKEVEEYVKKIVGESYAKS					ATCC4	CbpA tru -IVASLVMGSVVHATENEGATQVPTSSNRANESQAEOQEOPKKLDSERDKARKEVEEYVKKIVGESYAKS	69													
	DRRKHTQNVALNKLSAIKTEYLGLSVLEEKSEAEELPSEIKA					KLDAAFEQFKKDTL															
SPB328 (23F)	Cbp DRRKHTQNVALNKLSAIKTEYLGLSVSKKSEAEELPSEIKA					KLDAAFEQFKKDTL															
SPB365 (23F)	Cbp DRRKHTQNVALNKLSAIKTEYLGLSVSKKSEAEELPSEIKA					KLDAAFEQFKKDTL															
SPB105 (6B)	CbpA DRRKHTQNVALNKLSAIKTEYLGLSVSKKSEAEELPSETKK					EIDAAFEQFKKDTL															
SPSJ12 (19A)	Cbp DRRKHTQNVALNKLSAIKTEYLGLSVSKKSEAEELPSEIKA					KLDAAFEQFKKDTL															
SPB331 (14)	CbpA DRRKHTQNVALNKLSAIKTEYLGLSVSKKSEAEELPSEIKA					KLDAAFEQFKKDTL															
SPR332 (9V)	CbpA DRRKHTQNVALNKLSAIKTEYLGLSVSKKSEAEELPSEIKA					KLDAAFEQFKKDTL															
ATCC2	CbpA trun DRRKHTQNVALNKLSAIKTEYLGLSVSKKSEAEELPSEIKA					EKSEAEELPSEVKA	--KLDAAFEQFKKDTL														
R6X(2)	CbpA tru DRRKHTQNVALNKLSAIKTEYLGLSVSKKSEAEELPSEIKA					EKSEAEELPSEVKA	--KLDAAFEQFKKDTL														
SPSJ9 (14)	CbpA DRSKHIKTVNLINKLQDIKRTLYELNVLEEKSEAEELTSKTKEELTAAFEQFKKDTL					ELDAAFEQFKKDTL															
ATCC6B	CbpA tru KKVOHQITQADFNKKLSKIKTKLYELNVLEEKSEAEELTSKTKEELTAAFEQFKKDTL					KLDAAFEQFKKDTL															
Ntpe4	CbpA tru TIKRHTITVALVNELNNIKNEYILN--KIVESTSESQLQILMMESRSKVDEAVSKFEKDSSSSSSDSSTK					ATCC4	CbpA tru TIKRHTITVALVNELNNIKNEYILN--KIVESTSESQLQILMMESRSKVDEAVSKFEKDSSSSSSDSSTK	137													
	PTEPGKKVAFAEKKVEEAKKK					AEDQKEEDRRNYPTITYKTLLEIAESDVEV															
SPB328 (23F)	Cbp PTEPGKKVAFAEKKVEEAKKK					AEDQKEEDRRNYPTNTYKTLLEIAESDVEV	162														
SPB365 (23F)	Cbp PTEPGKKVAFAEKKVEEAKKK					AEDQKEEDRRNYPTNTYKTLLEIAESDVEV	162														
SPB105 (6B)	CbpA TK-KTVAEAEKKVEEAKKK					AKAQKEEDRRNYPTNTYKTLLEIAESDVEV	161														
SPSJ12 (19A)	Cbp PKEKKVAEAEKKVEEAKKK					AEDQKEEDRRNYPTNTYKTLLEIAESDVEV	160														
SPB331 (14)	CbpA PTEPGKKVAEAEKKVEEAKKK					AEDQKEEDRRNYPTNTYKTLLEIAESDVEV	161														
SPR332 (9V)	CbpA PTEPEKKVAEAEKKVEEAKKK					AEDQKEEDRRNYPTNTYKTLLEIAESDVEV	164														
ATCC2	CbpA trun KLGEKVAEAEKKVAAEAKK					AKAQKEEDRRNYPTNTYKTLLEIAESDVEV	159														
R6X(2)	CbpA tru KPGEKVAEAKKVEEAKKK					AEDQKEEDRRNYPTNTYKTLLEIAESDVEV	147														
SPSJ9 (14)	CbpA PTEPGKKVAEAKKVEEAKKK					AKAQKEEDRRNYPTNTYKTLLEIAESDVEV	163														
ATCC6B	CbpA tru STEPEKKVAEAKKVEEAKKK					AEDQKEEDRRNYPTNTYKTLLEIAESDVEV	164														
Ntpe4	CbpA tru PEASDTAKPNKPTEPGEKVAEAKKVEEAKKK					AKDQKEEDRRNYPTNTYKTLLEIAESDVEV	201														
ATCC4	CbpA trun PEASDTAKPNKPTEPGEKVAEAKKVEEAKKK					AKDQKEEDRRNYPTNTYKTLLEIAESDVEV	200														

Figure 2A

REST AVAILABLE COPY

Title: A POLYPEPTIDE COMPRISING THE AMINO ACID OF AN N-TERMINAL CHOLINE BINDING PROTEIN A TRUNCATE, VACCINE DERIVED THEREFROM AND USES THEREOF

Inventor(s): Tuomanen

Application No: To Be Assigned

Atty Dkt No: 044158/273011

3/8

KKAELELVEEAKESRDEKKINQAKAKVESKKAETRLKKIKTDREKAEEE-AKRRADAKLQEA---NVA

	220	230	240	250	260	270	280
SPB328 (23F)	Cbp	KKAELELVEEAKESRDEKKINQAKAKVESKKAETRLKKIKTDREKAEEE-AKRRADAKLQEA---NVA					227
SPB365 (23F)	Cbp	KKAELELVEEAKESRDEKKINQAKAKVESKKAETRLKKIKTDREKAEEE-AKRRADAKLQEA---NVA					227
SPB105 (6B)	CbpA	KKAELELVEEAKESRDEKKIKQAEAKVESKKAETRLLENIKTDREKAEEE-AKRRAEAKLKEAVEKNVA					230
SPSJ12 (19A)	Cbp	KKAELELVLVKVANEPRDEEKIKQAEAEVESKKAETRLKKIKTDREKAEEE-AKRRVDAKEQDE-----					224
SPB331 (14)	CbpA	KKAELELVLKEEAKESRDEKKINQAKAKVESKKAETRLKKIKTDREKAEEE-AKRRADAKLQEA---NVA					226
SPR332 (9V)	CbpA	KEAELELVLKEEAKESRNEGTINQAKAKVESKKAETRLKKIKTDREKAEEE-AKRRADAKLQEA-----					229
ATCC2	CbpA	trun	KKAELELVLKEEAKESRNEGTINQAKAKVESKKAETRLLENIKTDREKAEEE-AKRRADAKLQEA---NVA				222
R6X(2)	CbpA	tru	KEAELELVLKEEAKESRNEGTINQAKAKVESKKAETRLLENIKTDREKAEEE-AKRRADAKLQEA---NVA				213
SPSJ9 (14)	CbpA	KEAELELVLVKVANEPRDEEKKIKQAEAEVESKQAETRLKKIKTDREQAEEATRLLENIKTDREQAEEAKVK					227
ATCC6B	CbpA	tru	KKAELELVLVKVANEPRDEEKKIKQAEAEVESKQAETRLKKIKTDREQAEEATRLLENIKTDREQAEEAKVK				234
Ntype4	CbpA	tru	KKAELELVLVKVANEPRDEQKIKQAEAEVESKQAETRLKKIKTDREFAEEE-AKRRADAK-----				261
ATCC4	CbpA	trun	KKAELELVLVKVANEPRDKQKIKQAEAEVESKQAETRLKKIKTDREFAEEE-AKRRADAK-----				260

-SEQDKPKGRAKRGVPGELETAPDKKENDAKSSDSSVGEETLPSPSLKPEKKVAAEKKVVEAKKAEDQK

	290	300	310	320	330	340	350
SPB328 (23F)	Cbp	TSEQDKSKRRAKREVXGELATPDKKENDAKSSDSSVGEETLTSPLKPEKKVAAEKKVVEAKKAEDQK					297
SPB365 (23F)	Cbp	TSEQDKSKRRAKREVXGELATPDKKENDAKSSDSSVGEETLTSPLKPEKKVAAEKKVVEAKKAEDQK					297
SPB105 (6B)	CbpA	TSEQDKFKGRKRGVPGEQATPDKKENDAKSSDSSVGEETLPSPLKPGKKVAAEKKVVEADKKAKAQK					300
SPSJ12 (19A)	Cbp	-S-SKRKSXRKRGDVGEQATPDKKENDAKSSDSSVGEETLPSPLKPGKKVAAEKKVVEADKKAKAQK					291
SPB331 (14)	CbpA	TSEQDKSKRRAKREVXGELATPDKKENDAKSSDSSVGEETLPSPLKPGKKVAAEKKVVEADKKAKAQK					296
SPR332 (9V)	CbpA	--SKRKSXRKRGALGEQATPDKKENDAKSSDSSVGEETLPSPLKPGKKVAAEKKVVEADKKAKAQK					295
ATCC2	CbpA	trun	--DKLKRRTKRAVPGEPATPDKKENDAKSSDSSVGEETLPSPLKSGKKVAAEKKVVEADKKAKDQK				288
R6X(2)	CbpA	tru	TSQGKPKGRAKRGVPGELETAPDKKENDAKSSDSSVGEETLPSPLKSGKKVAAEKKVVEADKKAKDQK				283
SPSJ9 (14)	CbpA	-S-KRKSRVKGDFGPGEPATPDKKENDAKSSDSSVGEETLPSPLKPGKKVAAEKKVVEADKKAKDQK					293
ATCC6B	CbpA	tru	--DEPKRRTKRGVLGEPATPDKKENDAKSSDSSVGEETLPSPLKPEKKVAAEKKVVEADKKAKDQK				300
Ntype4	CbpA	tru	--EQGKPKGRAKRGVPGELETAPDKKENDAKSSDSSVGEETLPSPLKPEKKVAAEKKVVEADKKAKDQK				328
ATCC4	CbpA	trun	--EQGKPKGRPKRGVPGELETAPDKKENDAKSSDSSVGEETLPSPLKPEKKVAAEKKVVEADKKAKDQK				327

EEDRRNYPTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD

	350	370	380	390	400	410	420
SPB328 (23F)	Cbp	EEDRRNYPTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD					367
SPB365 (23F)	Cbp	EEDRRNYPTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD					367
SPB105 (6B)	CbpA	EEDRRNYPTNTYKTLLEIAESDVKVKEAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD					370
SPSJ12 (19A)	Cbp	EEDRRNYPTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD					361
SPB331 (14)	CbpA	EEDRRNYPTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD					366
SPR332 (9V)	CbpA	EEDRRNYPTNTYKTLLEIAESDVKVKEAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD					365
ATCC2	CbpA	trun	EEDRRNYPTNTYKTLLEIAESDVKVKEAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD				358
R6X(2)	CbpA	tru	EEDRRNYPTNTYKTLLEIAESDVKVKEAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD				353
SPSJ9 (14)	CbpA	EEDHRNYPTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD					363
ATCC6B	CbpA	tru	EEDRRNYPTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD				370
Ntype4	CbpA	tru	EEDDRNYPNTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD				398
ATCC4	CbpA	trun	EEDDRNYPNTNTYKTLLEIAESDVEVKKAELELVKEEAKESRNEEKVKQAKAEVESKKAETRLEKIKTD				397

RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPNPAPAEQPKAEKPADQQA

	430	440	450	460	470	480	490
SPB328 (23F)	Cbp	RKKAEEEAKRRAAEEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAPKPNPAPAEQPKAEKPADQQA					437
SPB365 (23F)	Cbp	RKKAEEEAKRRAAEEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAPKPNPAPAEQPKAEKPADQQA					437
SPB105 (6B)	CbpA	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA					437
SPSJ12 (19A)	Cbp	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA					419
SPB331 (14)	CbpA	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA					436
SPR332 (9V)	CbpA	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA					432
ATCC2	CbpA	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA					425
R6X(2)	CbpA	tru	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKTDDQQA				411
SPSJ9 (14)	CbpA	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA					423
ATCC6B	CbpA	tru	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA				437
Ntype4	CbpA	tru	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA				458
ATCC4	CbpA	trun	RKKAEEE-AKKAAEEDRVKEKPAEQPQPOPAPAPQPKPAEEPEPNPAPAP-PKPKPAEQPKAEKPADQQA				457

EE--

SPB328 (23F)	Cbp	EE		439
SPB365 (23F)	Cbp			437
SPB105 (6B)	CbpA	EE		439
SPSJ12 (19A)	Cbp			419
SPB331 (14)	CbpA	E		437
SPR332 (9V)	CbpA	E		433
ATCC2	CbpA	trun	EE	427
R6X(2)	CbpA	tru	EE	413
SPSJ9 (14)	CbpA	EE		425
ATCC6B	CbpA	tru	EE	439
Ntype4	CbpA	tru	EE	460
ATCC4	CbpA	trun	EE	459

Figure 2B

BEST AVAILABLE COPY

Title: A POLYPEPTIDE COMPRISING THE AMINO ACID OF AN N-TERMINAL CHOLINE BINDING PROTEIN A TRUNCATE, VACCINE DERIVED THEREFROM AND USES THEREOF

Inventor(s): Tuomanen

Application No: To Be Assigned

Atty Dkt No: 044158/273011

4/8

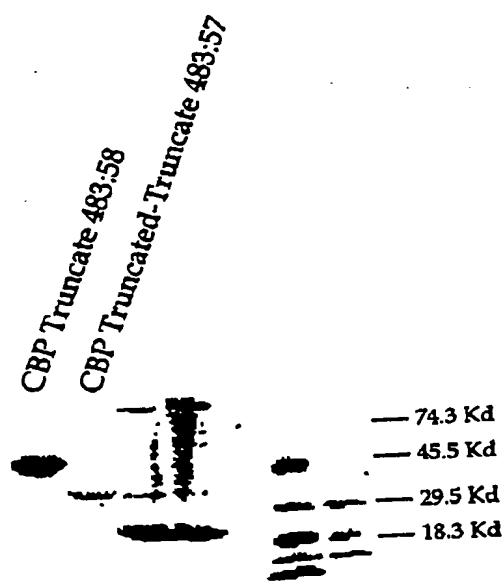


Figure 3

BEST AVAILABLE COPY

Title: A POLYPEPTIDE COMPRISING THE AMINO ACID OF AN N-
TERMINAL CHOLINE BINDING PROTEIN A TRUNCATE,
VACCINE DERIVED THEREFROM AND USES THEREOF
Inventor(s): Tuomanen
Application No: To Be Assigned
Atty Dkt No: 044158/273011

5/8

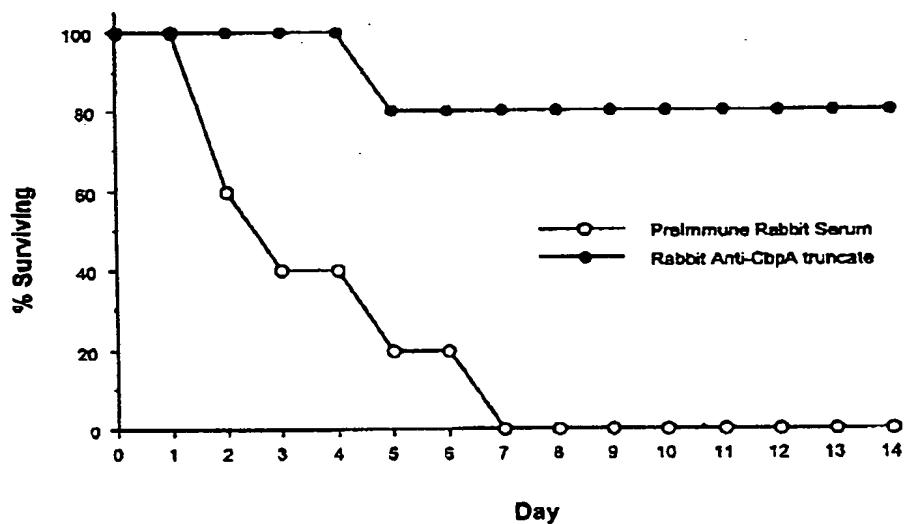


Figure 4

BEST AVAILABLE COPY

Title: A POLYPEPTIDE COMPRISING THE AMINO ACID OF AN N-TERMINAL CHOLINE BINDING PROTEIN A TRUNCATE, VACCINE DERIVED THEREFROM AND USES THEREOF

Inventor(s): Tuomanen
Application No: To Be Assigned
Atty Dkt No: 044158/273011

6/8

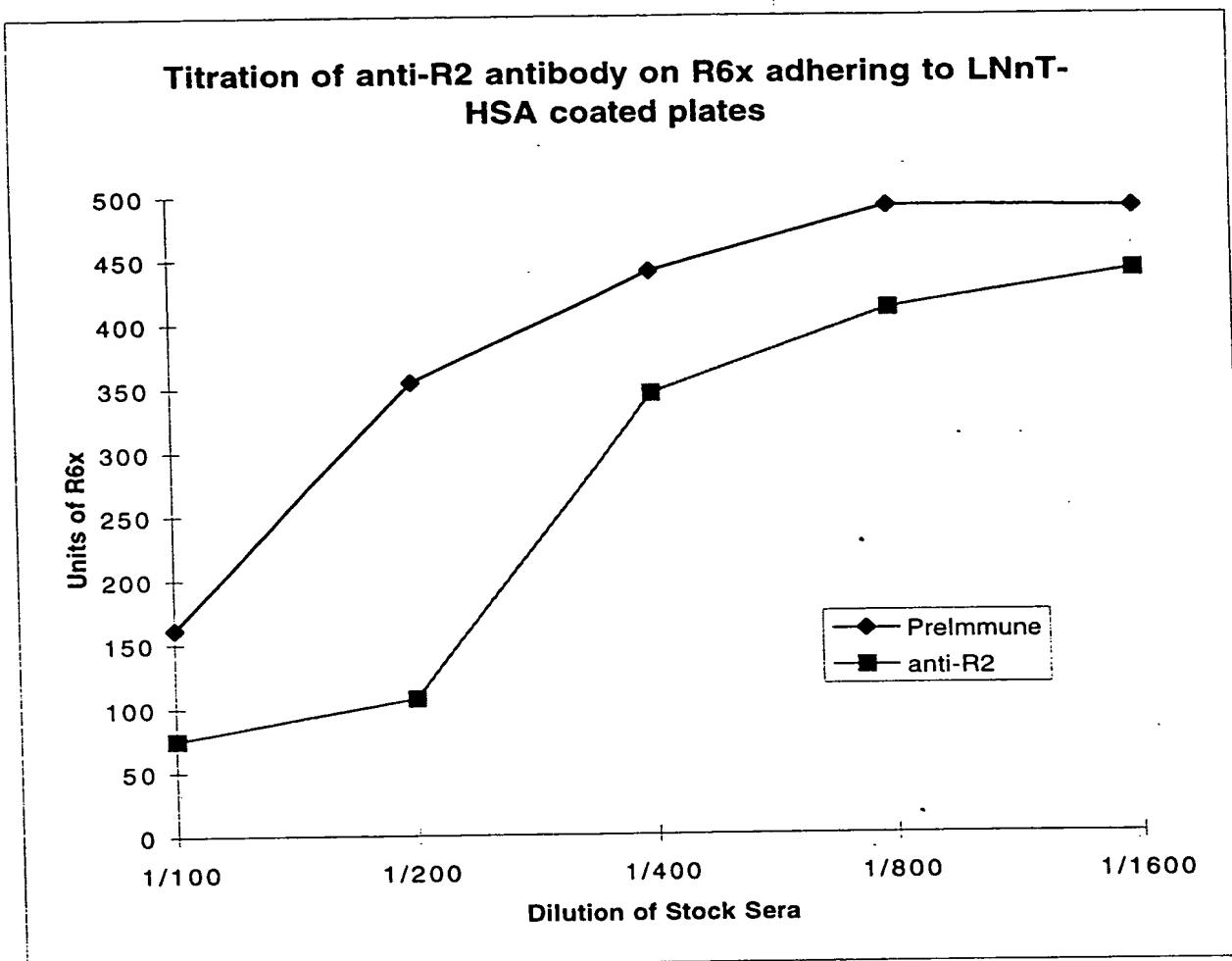


Figure 5

REST AVAILABLE COPY

Title: A POLYPEPTIDE COMPRISING THE AMINO ACID OF AN N-TERMINAL CHOLINE BINDING PROTEIN A TRUNCATE, VACCINE DERIVED THEREFROM AND USES THEREOF

Inventor(s): Tuomanen

Application No: To Be Assigned

Atty Dkt No: 044158/273011

7/8

T4R Pretreated with anti-CbpA Antibody Prior to Adhesion to LNnT-HSA Coated Plates

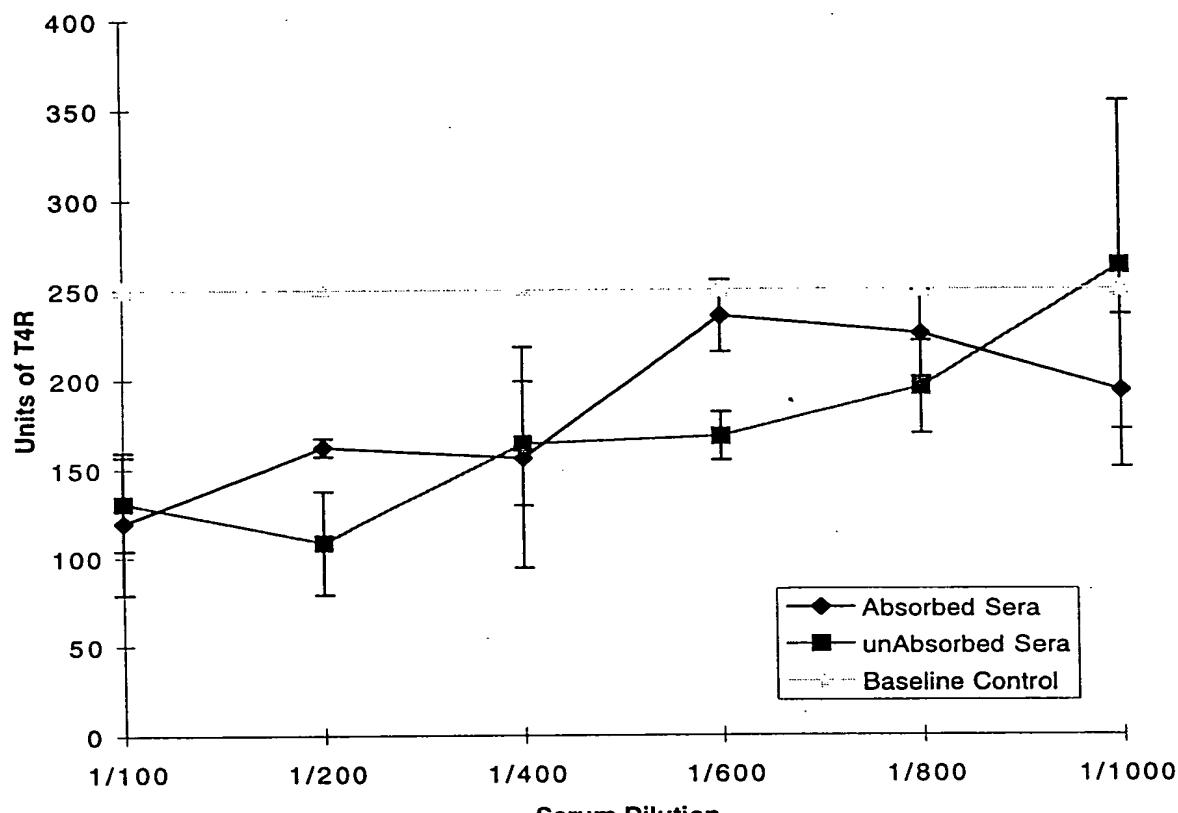


Figure 6

BEST AVAILABLE COPY

Title: A POLYPEPTIDE COMPRISING THE AMINO ACID OF AN N-TERMINAL CHOLINE BINDING PROTEIN A TRUNCATE, VACCINE DERIVED THEREFROM AND USES THEREOF

Inventor(s): Tuomanen

Application No: To Be Assigned

Atty Dkt No: 044158/273011

8/8

Active Protection

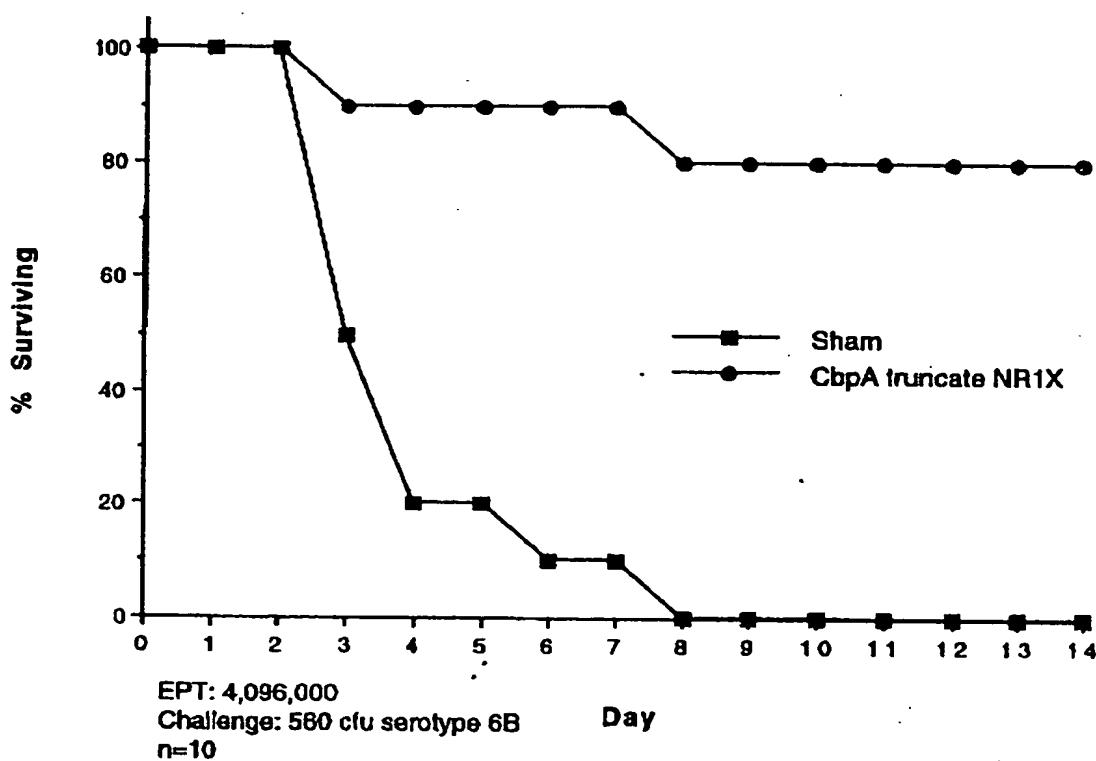


Figure 7

BEST AVAILABLE COPY